# SUMMARY ANALYSIS OF ACCESS PROVIDERS

January 29, 1997

QUALITY STRATEGIES

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## I. INTRODUCTION

In January 1997 Ameritech retained Quality Strategies to examine a particular segment of the telecommunications industry. Specifically, Ameritech requested that Quality Strategies develop or assemble information about the provisioning of high-speed transport services (more familiarly known as "HiCap") within the five state region where Ameritech has most of its business operations.[1] One of the primary uses of HiCap services is to transport telecommunications traffic directly from the premises of large telecommunications users to their long-distance service provider's point-of-presence (POP), but HiCap services can be used generally wherever telecommunications transport services are needed. Ameritech sought information about access providers in the metropolitan areas of the Ameritech Region, specifically, Chicago, Detroit, Grand Rapids, Cleveland, Columbus, Indianapolis, and Milwaukee.

Accordingly, Quality Strategies designed a study to (1) identify which firms provided HiCap services in the above metropolitan areas; (2) evaluate the extent of their physical networks; and (3) profile the facilities and organizations of the access providers. The research was limited to firms such as Ameritech, MCImetro, and MFS that provide HiCap services to others: in other words, the research did not include HiCap connections that firms might use as part of their internal data and communications systems.[2] At Ameritech's request the actual data presented in this report were assembled primarily from studies previously performed by Quality Strategies for Ameritech. This report therefore represents a summary of these earlier studies.

In this report, as in the previous reports, the HiCap service providers were identified from news reports and company press releases. The extent of the physical facilities operated by these suppliers was determined by sample survey of access customers supplemented by the suppliers' own marketing literature, proposals, and press releases, as well as by investor analyst reports, and Internet web sites.

[1] The five state region (or "Ameritech region") include Ohio, Indiana, Wisconsin, Illinois, and Michigan.
[2] Private self-supply of telecommunications services are an increasingly important part of the telecommunications industry but are not included in this study.

The data that are presented in this report demonstrate that HiCap services are available from numerous service providers in each of the seven metropolitan areas. The service providers have substantial facilities, primarily comprised of the fiber-optic SONET ring technologies with DS-1 or DS-3 circuits connecting the user to the backbone network. SONET facilities are capable of providing transport for long-distance access of both voice and data as well as local exchange transport and exchange private line transport services.[3] Finally, customer perceptions demonstrate a willingness to use any of the access providers.

[3] Because most of the access providers described in this report also own and operate class-5 switches, the SONET networks also are capable of providing local exchange services.

## II. METHODOLOGY

In research on HiCap provisioning, Quality Strategies obtains a list of businesses from list brokers in each metropolitan area. Random samples were developed from the list (using random number generation) for each of the seven metropolitan areas. Typical sample sizes are as follows:[4]

**Table II.1**
Typical Sample Sizes

| | |
|---|---|
| Chicago | 366 |
| Grand Rapids | 340 |
| Columbus | 327 |
| Cleveland | 428 |
| Milwaukee | 458 |
| Detroit | 307 |
| Indianapolis | 387 |
| TOTAL | 2613 |

Representatives from each of the sample businesses were interviewed and asked questions regarding their usage of HiCap (DS-1 and DS-3) special access and point-to-point (exchange) services. Respondents refer to their invoices in providing the requisite high capacity services information. Private network circuits such as microwave, satellite, and company-owned fiber are included in the survey questionnaire, but the results are not reported in this report.

[4]The data provided in this report are taken from a collection of several surveys produced by Quality Strategies for Ameritech. Accordingly, the actual number of respondents for the different parts of the report will differ from those described in the above table. However, the numbers reported herein are representative of the number utilized in the original reports. Sample sizes are designed to provide statistical validity based on a 95 percent confidence interval or better for each metropolitan area surveyed.

## III. HICAP SERVICE PROVIDERS

Table III.1 lists the HiCap service providers in each of the seven metropolitan areas studied. Increasingly, new and established alternative access providers are announcing plans to enter or expand in these markets. Currently, of the seven metropolitan areas, Cleveland has the greatest number of access providers with six. In the other six metropolitan areas, Chicago, Detroit, Indianapolis and Milwaukee have four access providers, Columbus has three access providers and Grand Rapids has two access providers.

**Table III.1**
HiCap Service Providers in Selected Metro Areas

| Metro Area | HiCap Service Providers |
|---|---|
| Chicago | Ameritech, MFS, TCG, MCImetro |
| Grand Rapids | Ameritech, Brooks Fiber |
| Columbus | Ameritech, Time Warner, ICG |
| Cleveland | Ameritech, Time Warner, ICG, MFS, MCImetro, TCG |
| Milwaukee | Ameritech, TCG, MCImetro, Time Warner |
| Detroit | Ameritech, MFS, TCG, MCImetro |
| Indianapolis | Ameritech, Time Warner, MFS, TCG |

Within the Ameritech Region, current HiCap access providers include Ameritech, Brooks Fiber, ICG, MCImetro, MFS, Time Warner, and TCG:

- **Brooks Fiber** provides HiCap access services in the Grand Rapids, Michigan area (including Holland, Zeeland, and Traverse City), as well as in the Ann Arbor, Michigan and Toledo, Ohio areas. The company focuses on providing telecommunications services to businesses and residences in Tier 2 markets throughout the United States. Grand Rapids is one of the company's oldest and largest service areas.

- **ICG Telecom Group** clusters its operations in key areas of the country including California, Colorado, and the Ohio valley. In the Ohio cluster, ICG's networks are now operational in Akron, Cleveland, Columbus, and Dayton. In addition to its current fiber networks in the area, ICG is constructing a 331 mile fiber link to connect its networks in Ohio.

  In December, ICG filed with the Public Utility Commission of Ohio to expand its certificate of operating authority to include the entire state.

- **MCImetro,** a wholly owned subsidiary of MCI Communications, serves as MCI's CLEC arm, delivering local service infrastructure and capabilities for MCI to package and sell to business, institutional, residential, and government customers. MCImetro's infrastructure includes transmission facilities and switching systems. MCImetro also has collocations capabilities. MCImetro provides HiCap services in 25 cities in the United States, including four major metro areas in Ameritech territory: Chicago, IL; Detroit, MI; Cleveland, OH; and Milwaukee, WI.

  With MCImetro's capabilities, MCI can offer full service to its customers, including local, long distance, international, data, wireless, satellite and Internet access. Assuming that the merger with British Telecom (announced in November 1996) is approved, MCImetro may well have access to further capital for even more aggressive network expansion.

- **MFS Communications**, a wholly owned subsidiary of MFS WorldCom as of December 31, 1996, has networks operational in approximately 37 U.S. cities, and four European locations. In the Ameritech region, the company operates fiber optic networks in Chicago, IL; Cleveland, OH; Detroit, MI; and Indianapolis, IN.

  MFS began its operations by providing competitive HiCap service in Chicago in 1987. The merger with WorldCom (fourth largest interexchange carrier in the US) provides MFS with access to WorldCom's network and customer base, and establishes the combined entity as a true full-service provider of local, long distance, data, and Internet services.

- **Time Warner Communications**, a wholly owned subsidiary of Time Warner Entertainment, operates networks in some 16 cities in the US, including three cities in Ameritech territory: Columbus, OH; Indianapolis, IN; and Milwaukee, WI.

- **TCG** provides competitive telecommunications services throughout 57 major markets in the US, including Chicago, IL; Detroit, MI; and Indianapolis, IN in Ameritech territory. TCG recently announced that it signed an agreement with Chicago's Copley Memorial Hospital to provide outbound local phone service; in Indianapolis, TCG also announced an agreement with Methodist Hospital to provide communications links with over 20 remote carrier facilities in central Indiana.

  TCG, like other competitive telecommunications providers, is using its already-deployed infrastructure to expand its service portfolio to enhance its position as a full service provider. In November 1996, TCG unveiled its OnmiOnLine Internet Services, to be provided in Chicago, as well as New York and Boston, over its SONET-based ATM backbone network.

Tables III.2 and III.3 provide an indication of the extent of the HiCap business in the seven metropolitan areas. Table III.2 shows the number of DS-1 local distribution channels (LDCs) provisioned by the HiCap suppliers; and Table II.3 shows the number of DS-3 LDCs provisioned. An LDC is a component of an overall HiCap circuit, generally (but not always) two are required per circuit. An LDC count therefore is an indicator of the volume of HiCap business being provisioned by a service provider.

**Table III.2**
Local Distribution Channels Provisioned
By Provider by Metro Area

## *DS1 LDCs*

| | Ameritech | MFS | TCG | MCI | ICG | Brooks | TWC |
|---|---|---|---|---|---|---|---|
| Chicago (City) | 5232 | 5022 | 1343 | 70 | - | - | - |
| Chicago (Suburban) | 8476 | 2013 | 1602 | 24 | - | - | - |
| Cleveland | 2859 | 151 | 11 | 9 | 357 | - | 51 |
| Columbus | 2676 | - | - | - | 233 | - | 602 |
| Detroit | 4883 | 493 | 682 | 18 | - | - | - |
| Grand Rapids | 718 | - | - | - | - | 682 | - |
| Indianapolis | 2975 | 29 | 10 | - | - | - | 168 |
| Milwaukee | 2837 | - | 527 | 11 | - | - | 5 |
| *Total:* | *30656* | *7708* | *4175* | *132* | *590* | *682* | *826* |

**Table III.3**
Local Distribution Channels Provisioned
By Provider by Metro Area

## *DS3 LDCs*

| | Ameritech | MFS | TCG | MCI | ICG | Brooks | TWC |
|---|---|---|---|---|---|---|---|
| Chicago | 681 | 276 | 243 | 4 | - | - | - |
| Chicago Suburban | 545 | 70 | 76 | 0 | - | - | - |
| Cleveland | 226 | 4 | - | 0 | 61 | - | 7 |
| Columbus | 308 | | - | - | 17 | - | 48 |
| Detroit | 440 | 36 | 82 | 2 | | - | - |
| Grand Rapids | 107 | - | - | - | - | 105 | - |
| Indianapolis | 257 | 3 | 1 | | - | - | 62 |
| Milwaukee | 123 | - | 41 | 1 | - | - | - |
| *Total:* | *2687* | *389* | *443* | *7* | *78* | *105* | *117* |

## Non-traditional Suppliers

In addition to commercial suppliers of HiCap services such as MFS and TCG, there are newer entrants who provide customers with additional alternatives, but which were not included as part of the initial surveys.

- ***Cable TV***

Cable TV (CATV) transport facilities are by definition broadband and thus high capacity facilities. Consisting of either coaxial cable, fiber-optic cable, or both in a so-called "hybrid design," CATV facilities are used predominantly for the transport of video signals. However, the high bandwidth of CATV facilities means that the facilities can be also utilized for the transport of telecommunications signals (voice and data).

As a result of the technical capabilities of CATV facilities, some CATV companies are affiliating or merging with HiCap access providers. An example is Time Warner Cable and Time Warner Communications' CAP operations. The facilities and rights-of-way are used for access as well as television signals. TCG ("Teleport"), has relied heavily on its affiliation with Cox, Comcast and TCI (three major cable operators) to gain rights-of-way and to lease portions of CATV plant for the rapid deployment of its HiCap networks. TCG identifies its close relationship with CATV operators as a key component of its overall business case.[5]

An example of a CATV company providing an alternative for a long distance company is found in AT&T's agreement with Jones Intercable, Inc. wherein the cable company will install (and lease to AT&T) about 50 route miles of fiber-optic cable in several Chicago suburbs.

- ***Utilities***

Utilities are also alternative suppliers for high capacity transport services and service components such as rights-of-way, poles, towers, and excess fiber capacity.

In August 1996, ICG Communications, Inc. announced a long-term contract with Columbus, Ohio-based American Electric Power (AEP) to build a 45-mile network addition in metropolitan Columbus, plus a 138-mile long-haul link to Canton, Ohio. According to the announcement, the agreement between ICG's subsidiary, ICG Telecom Group, Inc. and AEP's subsidiaries, Columbus Southern Power Company and Ohio Power Company, will allow ICG to more effectively address a local serving-area population of about 1.4 million.

[5] "Through its relationships with cable television operators, the Company (TCG) has been able to utilize existing rights-of-ways, obtain fiber-optic facilities and share the cost of building new fiber optic networks, thereby allowing the Company to achieve significant economies of scale and scope through capital efficiencies in extending its existing networks in a rapid, efficient and cost effective manner," TCG *Prospectus*, page 5.

## IV. NETWORK INFRASTRUCTURE AND CUSTOMER PERCEPTION

In addition to Ameritech, six providers of HiCap access services were identified as having significant ongoing operations within the Ameritech Region. The providers have made capital investments in physical plant, establishing fiber backbones in the seven metropolitan areas examined, electronics to support various product offerings such as DS-1, DS-3, SONET services (OC-n dedicated circuits and customer dedicated rings) and operational support systems to monitor and maintain their network's performance levels. One indicator of the extent of the current network infrastructure for HiCap services is the miles of fiber owned or controlled by the service provider. Another indicator of service provisioning capabilities is from verbatim comments from customers themselves.

Table IV.1 shows the number of miles of fiber facilities owned and operated by the access providers. Route miles refers to the simple length of the fiber deployed. However, a given length of cable can have different numbers of fiber strands in it, and therefore different capacity for transporting traffic. The fiber-mile measure is designed to account for capacity differences by multiplying route miles by the number of fiber strands in the facilities. It should be noted that Route Miles and Fiber Miles do not fully reflect the capabilities of the providers. Bandwidth capacity may be added to a network through an upgrade of the electronics that support a fiber route.

**Table IV.1**
HiCap Network Miles

| | *Illinois* | *Indiana* | *Michigan* | *Ohio* | *Wisconsin* | *Totals* |
|---|---|---|---|---|---|---|
| ***MCImetro*** | | | | | | |
| Route Miles | 150 | - | 60 | 36 | 250 | 496 |
| Fiber Miles | 3,100 | - | 1,400 | 600 | 2,800 | 7,900 |
| On Net Buildings | 15 | - | 20 | 5 | 12 | 52 |
| ***MFS*** | | | | | | |
| Route Miles | 175 | 72 | 120 | 36 | - | 403 |
| Fiber Miles | 30,000 | N/A | 13,700 | 3,000 | - | 46,700 |
| On Net Buildings | 155 | 18 | 102 | 19 | - | 294 |
| ***TCG*** | | | | | | |
| Route Miles | 360 | 113 | 165 | N/A | 189 | 827 |
| Fiber Miles | 43,000 | N/A | 19,000 | N/A | 12,400 | 74,400 |
| On Net Buildings | 136 | 75 | 24 | N/A | 22 | 257 |
| ***Brooks*** | | | | | | |
| Route Miles | - | - | 287 | - | - | 287 |
| Fiber Miles | - | - | 15,000 | - | - | 15,000 |
| On Net Buildings | - | - | 50 | - | - | 50 |
| ***ICG*** | | | | | | |
| Route Miles | - | - | - | 114 | - | 114 |
| Fiber Miles | - | - | - | 5,100 | - | 5,100 |
| On Net Buildings | - | - | - | 65 | - | 65 |
| ***TWC*** | | | | | | |
| Route Miles | - | 350 | - | 125 | 150 | 625 |
| Fiber Miles | - | 9,800 | - | 6,100 | 2,600 | 18,500 |
| On Net Buildings | - | 50 | - | 74 | 10 | 134 |
| ***Grand Total*** | | | | | | |
| Route Miles | 685 | 535 | 632 | 311 | 589 | 2,752 |
| Fiber Miles | 76,100 | 9,800 | 49,100 | 14,800 | 17,800 | 167,600 |
| On Net Buildings | 306 | 143 | 196 | 163 | 44 | 852 |

N/A = Not Available; "-" = Does not apply.
Route miles and fiber miles from Quality Strategies "CAP Network Capacity" 1Q96; On Net Building data from Quality Strategies "Cap Network Descriptions" 1Q96

In addition to the physical plant analysis, Quality Strategies also examines the customer perceptions of the access providers. While customer perceptions are not "network infrastructure," perceptions play a role in the success of a firm in the marketplace. Quality Strategies keeps records of customer statements as part of the interview process and provides a sample of them here as an indication of how the access providers are perceived.

- "We've been extremely satisfied with our decision to switch to MFS earlier this year. Their superior network performance and extensive diversity offered at no extra charge are the reasons why we will continue to do business with them." (Chicago, IL customer of MFS)

- "Having local competition has been great for this [Chicago] area. The CAPs offer great service at a great price." (Chicago, IL customer)

- "I'm glad I did [switch providers]. Brooks has a much more tailored approach to doing business. They're small enough to be able to blur their own internal lines for me, but large enough to provide consistent, quality service. That's besides the fact that they're much cheaper [than Ameritech]." (Grand Rapids, MI customer of Brooks Fiber)

- "Our national office has a deal with TCG. We receive large volume and term discounts, based on our many offices across the country. Ameritech just doesn't have the ability (i.e., national network) to match these rather substantial discounts." (Detroit, MI customer of TCG)

- "They (ICG) came to my office and showed me sample billing for like customers in like businesses. I'm not an easy sell, but I couldn't refuse." (Columbus, OH customer of ICG)

- "We've noticed a difference in overall quality since the switch. So have our clients. Our data transmission applications don't crash as often. TWC flat our has a lower error rate than Ameritech." (Columbus, OH customer of Time Warner Communications)

- "By using TCG for other services, we've been able to save a significant amount. I don't know if anyone could beat this, but I've been please with all aspects of their service thus far." (Milwaukee customer of TCG)

- "MCImetro is newer. I know my boss was worried at first. MCImetro has met the challenges I put in front of them. They suggested using a dedicated local circuit, It's lowered my monthly expenditure, and the quality seems better." (Milwaukee customer of MCImetro)

*Source: Quality Strategies, Ameritech Key Measures, 3Q96.*

## V. Facilities Data Disaggregated by Metropolitan Area

In this section, disaggregated infrastructure data are presented for each of the seven metropolitan areas investigated. Three statistics are presented: route miles, fiber miles, and the number of buildings directly connected to the SONET network by way of a DS-1 or DS-3 circuit.

### A. Chicago

Table V.1 shows the results of a survey performed in the first quarter of 1996 regarding network infrastructure as it regards fiber transport facilities.

**Table V.1**
HiCap Infrastructure Indicators
- Chicago -

| CAP | Route Miles | Fiber Miles | Buildings On Net |
|---|---|---|---|
| MFS | 175 | 30,000 | 155 |
| TCG | 360 | 43,000 | 136 |
| MCImetro | 150 | 3,100 | 15 |

Data as of 1Q96.

As of 1Q96, MCImetro planned to expand its network by 15 additional buildings.

## B. Detroit

**Table V.2**
HiCap Infrastructure Indicators
- Detroit -

| CAP | Route Miles | Fiber Miles | Buildings On Net |
|---|---|---|---|
| MFS | 120 | 13,700 | 102 |
| TCG | 165 | 19,000 | 24 |
| MCImetro | 60 | 1,400 | 20 |

Data as of 1Q96.

Expansion plans:

- MCImetro Detroit has two SONET rings targeted for completion by the end of 2Q96, adding an estimate of 20 aerial fiber miles to the MCImetro Detroit network.

Notes:

- Detroit estimates include many suburban communities as well as downtown.
- All market alternatives mentioned above serve downtown Detroit.

## C. Grand Rapids

**Table V.3**
HiCap Infrastructure Indicators
- Grand Rapids -

| CAP | Route Miles | Fiber Miles | Buildings On Net |
|---|---|---|---|
| Brooks | 287 | 15,000 | 50 |

Data as of 1996 Q1.

Expansion plans:

- In November, Brooks Fiber announced that it will begin providing ARC Networks, a telecommunications integrator, with local resale services in Grand Rapids (in addition to Hartford CT, Springfield MA, and Providence RI).
- On October 24, 1996, Brooks Fiber announced its intention to expand its switched services. During the third and fourth quarter, Brooks expanded its local service offering to include seven additional central offices, adding the ability to provide an additional 162,000 access lines to the Grand Rapids community.

## D. Cleveland

**Table V.4**
HiCap Infrastructure Indicators
- Cleveland -

| CAP | Route Miles | Fiber Miles | Buildings On Net |
|---|---|---|---|
| MFS | 36 | 3,000 | 19 |
| ICG | 52 | 1,700 | 20 |
| MCImetro | 36 | 600 | 5 |

Data as of 1996 Q1.

Notes:
- MCImetro completed construction of its Cleveland network in April 1996. This network consists of one SONET ring. MCImetro is targeting three additional buildings in the downtown area.
- TCG is currently constructing its Cleveland network and expects it to be operational by the end of 3Q96.

## E. Columbus

**Table V.5**
HiCap Infrastructure Indicators
- Columbus -

| CAP | Route Miles | Fiber Miles | Buildings On Net |
|---|---|---|---|
| ICG | 62 | 3,400 | 45 |
| TWC | 125 | 6,100 | 74 |

Data as of 1996 Q1.

Notes:
- ICG's Columbus network links its 62 mile downtown ring to businesses in suburban Columbus.

## F. Indianapolis

**Table V.6**
HiCap Infrastructure Indicators
- Indianapolis -

| | Route Miles | Fiber Miles | Buildings On-net |
|---|---|---|---|
| **TCG** | 113 | N/A | 75 |
| **TWC** | 350 | 9,800 | 50 |
| **MFS** | 72 | N/A | 18 |

Data as of 1996 Q1.

**Teleport Communications Group (TCG)**
- TCG operates a 100% SONET based fiber network which includes downtown Indianapolis and various suburban communities.
- Network expansion: TCG expects to add roughly 25 additional buildings, targeting suburban locations.

**Time Warner Communications (TWC)**
- Time Warner operates a 100% SONET based network that serves both downtown and suburban Indianapolis.
- Between 1994 and 1995, TWC's Indianapolis revenue increases are estimated at 147%.

**MFS**
- MFS operates a 100% SONET based network in the Indianapolis area, serving downtown Indianapolis and various suburban communities.
- MFS is constructing SONET rings at the Indianapolis International Airport and plans expansion of service at the Indianapolis Motor Speedway.

During the second quarter 1996, CAP High Speed Transport services in Indiana grew at a rate of approximately 70% on an annualized basis; High Speed Transport services overall in Indiana grew by about 14% (2Q96 Report).

On October 10, 1996, ICG Telecommunications Group, Inc. filed for local service certification permission in Indiana. While the application indicates that ICG will serve customers initially as a reseller, it indicates that it may also build facilities in the state.

## G. Milwaukee

**Table V.7**
HiCap Infrastructure Indicators
- Milwaukee -

| CAP | Route Miles | Fiber Miles | Buildings On Net |
|---|---|---|---|
| TCG | 189 | 12,400 | 22 |
| Time Warner | 150 | 2,600 | 10 |
| MCImetro | 250 | 2,800 | 12 |

Data as of 1996 Q1.

Notes:

- As of 1Q96, TCG targeted twenty-one additional buildings, in addition to the twenty-two already on net.
- TCG anticipates beginning construction of a fiber optic network in Madison by 4Q98.
- Time Warner has targeted both Appleton and Green Bay for construction of fiber optic networks and anticipates beginning construction by 1Q98.
- MCImetro also anticipates construction of a fiber optic network in Madison by 4Q98.

## H. Other

In addition to the seven metropolitan areas that formed the formal part of the survey, Quality Strategies uncovered data regarding actions in other areas as well. For example, in Ohio, in "This Week in Worthington" (7/1/96), Les Wollgast, senior vice president for ICG Telecommunications Group - Ohio Valley division, stated "Our goal is to be the largest alternative to Ameritech in Ohio ...The company currently provides phone service to businesses only in Cleveland, Akron, Dayton, and is constructing a network in Cincinnati. ICG plans to link these metropolitan areas which would create 600-plus miles of a fiber optics network reaching about 6.3 million people." Time Warner is completing construction of a 100% SONET based fiber optic network in downtown Akron. Time Warner will initially provide dedicated services to downtown Akron businesses. Time Warner also has plans to construct a fiber optic network in Lima in 1997, consisting of about 30 route miles. Brooks Fiber has begun construction of a fiber optic network that will service downtown Toledo and the suburb of Maumee upon completion. Brooks is expected to begin testing its Toledo network during 3Q96.

In Michigan, as mentioned, Brooks Fiber has infrastructure in place to accommodate customers in Lansing, Holland, and Ann Arbor, Michigan.

## VI. LONG DISTANCE CARRIER PERSPECTIVE

- ***AT&T***

According to AT&T statements and press reports, the company is changing its strategy to rely on other firms for some of the provisioning of exchange access services.[6] AT&T has signed access provisioning agreements with TCG for services within TCG's operating areas (e.g. the metro areas listed in Table II.1), Jones Intercable (in Chicago), ICG (in Ohio), Time Warner, and Brooks Fiber (in Grand Rapids and other areas).

AT&T also announced in January (USA Today, January 1997) that it intends to modify its local strategy by negotiating with smaller carriers such as Winstar Communications, an example of the growing opportunity for smaller service providers.

- ***MCI***

As indicated previously, MCI through its CAP subsidiary MCImetro has made it clear that it will, at a minimum, provide high cap services to customers without using the services of an incumbent LEC. Moreover, in those areas where MCImetro does not currently have a presence, MCI has the option of buying the services of another CAP, such as TCG, ICG, Brooks Fiber, or Time Warner. For example, in a five year agreement, MCImetro has designated Brooks as its preferred provider of telecommunications services in seventeen, or more than half, of the markets in which Brooks operates. MCI has also invested in Brooks common stock and as of October 1996, MCI owned 3.2% of Brook's outstanding shares.

- ***WorldCom***

The WorldCom-MFS merger in 1996 gave a clear signal to the marketplace of WorldCom's intention to move its business onto the available network of the a CAP, thereby reducing expenses in the form of access payments to incumbent LECs.

[6] For example, "[AT&T president John R. Walter] is shifting AT&T's strategy away from spending billions to build a nationwide patchwork of local phone networks, moving instead toward striking friendly deals with the arch-rival Baby Bells," J.J. Keller, "AT&T's New President is Wasting No Time in Shaking Things Up," *The Wall Street Journal*, December 24, 1996, p. 1.